

Curriculum Vitae**David Harold Persing, M.D., Ph.D.**

Date of Birth: June 13, 1955, San Jose, California

Home Address: 22401 NE 25th Way, Redmond, WA 98053

Work Address: Seattle Life Sciences Center, Suite 200
1124 Columbia St.
Seattle, WA 98104

Contact Information: 206-754-5879 (V) 206-754-5715 (F) (Work)
425-898-0754 (V) 425-898-0274 (F) (Home)
E-mail: persing@corixa.com

Marital Status: Married

Education: September 1974 - June 1979
California State University, San Jose, California
B.A. in Biochemistry awarded June 1979

October 1980 - May 1988
School of Medicine, University of California,
San Francisco

October 1981 - May 1988
Medical Scientist Training Scholarship Program,
University of California, San Francisco

September 1982 - March 1987
Graduate Program in Biochemistry and Biophysics,
Division of Genetics, University of California,
San Francisco

March 1988
Ph.D. granted, Department of Biochemistry and
Biophysics, University of California, San Francisco

May 1988
M.D. granted, School of Medicine, University of
California, San Francisco

July 1988 - June 1990
Resident and Fellow, Department of Laboratory
Medicine, Yale School of Medicine

July 1989 - September 1990. Research Fellow, Department of Cell
Biology, Yale School of Medicine

Curriculum Vitae - Page 2
David H. Persing, M.D., Ph.D.

Honors:

Graduation with highest honors, California State University,
 San Jose, California, 1979

Departmental Honors in Chemistry, 1979

Finalist, Dean's Prize for Research, School of Medicine, 1981

Graduate Dean's prize for Student Research, University of California,
 San Francisco, 1984

Gip A. Hudson Award for the study of liver diseases, National
 Student Research Forum, Galveston, Texas, 1985

James McLaughlin Award for the study of infectious diseases,
 National Student Research Forum, Galveston, Texas, 1985

University of California Patent Funds Award, 1986

Young Investigator Award, Academy of Clinical Laboratory
 Physicians and Scientists, 1989

Mayo Foundation Scholar, 1990

ASM Foundation Lectureship, 1995-1997

Justus Strom Award, Swedish Medical Society, 1997

Research Sponsor, Naomi Judd Liver Scholar Award, American
 Liver Foundation, 1997

Olof Norlander Memorial Lecture, Karolinska Institute, 1998

Dubious Honors:

Consultant to Criminal Attorney Barry Scheck and invited expert
 witness, O.J. Simpson criminal trial

**Committee/Editorial
 Appointments:**

NCCLS Subcommittee on Molecular Methods, 1993-4
 NCCLS Subcommittee on Lyme Disease Testing, 1997
 College of American Pathologists, Microbiology Resource Committee,
 1994-present
 IDSA Practice Guidelines Committee on Lyme Disease, 1997-present

Editorships:

Associate Editor: *Journal of Clinical Microbiology*, 1996-2001
 Associate Editor: *Molecular Diagnosis*, 1996-present

Editorial Boards:

Journal of Clinical Microbiology (1990-1996)
Diagnostic Microbiology and Infectious Diseases (1994-97)
Emerging Infectious Diseases (1997-present)
New England Journal of Medicine (Regular Reviewer)
Gastroenterology (Regular Reviewer)
Journal of Infectious Diseases (Guest Reviewer)

**Scientific Advisory
 Boards:**

Vysis, Inc., Naperville, IL (1995-present)
 BioMerieux, Marcy l'Etoile, France (1996-1999)

Curriculum Vitae - Page 3
David H. Persing, M.D., Ph.D.

Consulting positions:

Baxter Immuno, Vienna, Austria (1998-2000)
Roche Molecular Systems, Alameda, CA (1998-present)

Corporate Boards:

Virologic, Inc, South San Francisco, CA (2000-)

**Licensure and Certification
Status:**

Medicine and Surgery License #35080, State of Minnesota
Board Certified Forensic Examiner
Board Eligible, Clinical Pathology
New York State Laboratory Certification in Bacteriology, Virology,
Parasitology, and Laboratory Immunology

Intellectual Property:

"Specific Detection of Rifampin Resistant *Mycobacterium tuberculosis*
by Nucleic Acid Amplification," U.S. patent granted July 1997.

"Recombinant proteins for immunologic detection of granulocytic
ehrlichiosis." U.S. patent pending since 1997.

"Recombinant proteins for immunologic detection of human
babesiosis." U.S. patent pending since 1997

"Method for long-term preservation of nucleic acids"
U.S. patent pending since 1997 (claims allowed April 2001)

"Toll-like receptor activation and stimulation of innate immune
responses via aminoalkyl glucosaminide phosphates" U.S. patent
pending since 2000

"Compounds and methods for the diagnosis and treatment of Babesial
infection" U.S. patent pending since Jan. 2001

"Compositions and methods for the therapy and diagnosis of
pancreatic cancer" U.S. patent pending since Jan. 2001

"Methods to detect granulocyte ehrlichiosis" U.S. patent pending
since March 1997

"PCR detection of *Borrelia burgdorferi*" U.S. patent granted July 2000

"Prophylactic and therapeutic treatment of infections and other
diseases with mono- and disaccharide-based compounds" U.S. patent
pending since May 2000

"Compositions and methods for the therapy and diagnosis of acne
vulgaris" U.S. patent pending since April 2000

"Methods, compositions and kits for the detection and monitoring of
breast cancer" U.S. patent pending since April 2001

"Method for detecting *B. burgdorferi* infection" U.S. patent granted
April 2000

Appointments:

Summer Research Fellowship, University of California.

Curriculum Vitae - Page 4
David H. Persing, M.D., Ph.D.

San Francisco, School of Medicine, 1980

September 1981 to May 1988:
Medical Scientist Training Program, University of California, San Francisco

July 1988 to June 1990:
Resident, Department of Laboratory Medicine, Yale University School of Medicine

July 1990 to September 1990:
Mayo Foundation Scholar, Department of Cell Biology, Yale University School of Medicine

September 1990 to June 1994:
Senior Associate Consultant, Divisions of Clinical Microbiology, Experimental Pathology and Infectious Diseases, Mayo Clinic/Foundation

June 1994 to July 1999:
Consultant, Divisions of Clinical Microbiology, Experimental Pathology and Infectious Diseases, Mayo Clinic/Foundation

January 1991 to June 1995:
Assistant Professor, Department of Laboratory Medicine and Pathology, Mayo Medical School

July 1995 to July 1999
Associate Professor of Microbiology, Mayo Medical School, Mayo Clinic/Foundation

July 1995 to July 1999
Associate Professor, Department of Laboratory Medicine and Pathology, Mayo Medical School

September 1991 to 1999
Adjunct Professor, Department of Biology/ Microbiology, University of Wisconsin-La Crosse

1996 to July 1999
M.D. - Ph.D. Program Council, Mayo Medical School

August 1999- present
Vice president, Diagnostics Development, Corixa Corporation, Seattle, WA

August 1999- present
Medical Director, Infectious Disease Research Institute Seattle, WA

Societies:

American Association for the Advancement of Science
American Society for Microbiology
American Society of Tropical Medicine and Hygiene
North Central Cancer Treatment Group

Curriculum Vitae - Page 5
David H. Persing, M.D., Ph.D.

Teaching Experience:

Teaching Assistant, Chemistry for Engineers, San Jose State University, September 1979 to June 1980

Graduate Teaching Assistant, Introductory Biochemistry UC San Francisco, September 1982 to April 1983

Instructor, Biochemistry National Boards Review Course, School of Dentistry, UC San Francisco, 1983-1986

Biochemistry Advisor, Health Science Special Services Summer Program, 1984-1986

Laboratory Instructor, Medical Microbiology Course, Yale School of Medicine, 1988-1989

Lecturer, Medical Microbiology Course, Yale School of Medicine, 1988-1989

Medical Microbiology Course, Mayo Medical School,

Graduate Immunology Course, "Infection and Immunity," 1993-present.

Graduate Tumor Biology Course, "Infection, Immunity, and Cancer," 1996-1999

Volunteer Services:

Department of Public Health, Huehuetenango, Guatemala, 1977-1978

National Ski Patrol, Alpine Meadows and Homewood, CA, 1978-1981

Dorothy Day House, Rochester, MN

Extracurricular Activities:

Skiing, vintage automobile restoration, brass ensemble (trombone)

Research Experience and Supervisors:

Spring 1979 - Summer 1980

Dr. Robert Fowler, Department of Biology, San Jose State University. Mutational specificity of the base analogue, 2-aminopurine in *Escherichia coli*.

Summer 1980 - Spring 1981

Dr. Phillip Coffino, Department of Microbiology, UC San Francisco. Mechanism of 2-aminopurine mutagenesis in mouse T-lymphosarcoma cells.

Summer 1981 - Fall 1981

Dr. Harold E. Varmus, Department of Microbiology, UC San Francisco. Molecular analysis of mutant *src* alleles.

Summer 1982 - Winter 1983

Dr. Patrick O'Farrell, Department of Biochemistry, UC San Francisco. Isolation and characterization of DNA clones representing the *engrailed* locus of *Drosophila melanogaster*.

Curriculum Vitae - Page 6
David H. Persing, M.D., Ph.D.

Spring 1983 to 1988

Drs. Donald Ganem and Harold Varmus (thesis co-advisors)
 Identification and characterization of the presurface proteins of
 hepatitis B virus.

July 1989 to September 1990

Dr. Ari Helenius, Department of Cell Biology, Yale School of
 Medicine. Papovavirus: assembly, disassembly, and cellular
 interactions.

Current Research Interests:

Laboratory-based intramurally and extramurally funded programs

- 1) Immunological interactions of tick-borne infections
- 2) Effects of T cell differentiation on disease expression
- 3) Identification and characterization natural immunomodulatory components
- 4) Stimulation of innate immunity by natural and synthetic microbial products

Clinical research

- 1) Host immunogenetic determinants of infectious disease expression
- 2) Pathogen discovery by broad-range amplification techniques
- 3) Association of infections with cancer and other chronic human diseases
- 4) Antigen discovery and antigen characterization in human cancer

Extramural Support:

NIH - Allergy and Infectious Diseases

1-P01-AI30548-01-A1 (9/1/91 - 8/31/96)

Lyme Disease: Pathogenesis and Protection
 (Yale Program Project Grant)

P.I.: S. W. Barthold, D.V.M., Ph.D.

Co-investigator: David H. Persing, M.D., Ph.D.

\$295,407 award amount, direct costs

NIH - Allergy and Infectious Diseases

1-R01-AI32403-01 (9/30/91 - 8/31/97)

Multilocus Molecular Detection of B. burgdorferi

P.I.: D. H. Persing, M.D., Ph.D.

\$1,006,775 total award amount, direct costs

NIH - Arthritis Institute

1-R01-AR41497-01 (9/1/91 - 8/31/95)

Molecular Diagnosis and Monitoring of Lyme Disease

P.I.: D. H. Persing, M.D., Ph.D.

Co-funded with 1-R01-AI32403-01

\$227,359 award amount, direct costs

Status: decision not to renew

Centers for Disease Control

U50/CCU510343- (4/15/94 - 2/1/98)

Genetic Diversity of B. burgdorferi in the United States

P.I.: D. H. Persing, M.D., Ph.D.

\$410,365 total direct costs

Curriculum Vitae - Page 7
David H. Persing, M.D., Ph.D.

Centers for Disease Control
 U50/CCU510528 (11/1/97 - 10/31/00)
Recombinant Immunoassays for Detection of Babesia microti Infection
 P.I.: David H. Persing, M.D., Ph.D.
 \$187,500, total direct costs

NIH - Allergy and Infectious Disease
 1-R01-AI45253-01 (9/30/94-9/29/99)
Animal Models for Chronic Lyme Disease
 P.I.: Stephen W. Barthold, D.V.M., Ph.D.
 Co-investigator: David H. Persing, M.D., Ph.D.
 Co-investigator portion: \$688,114 total direct costs

NIH - Allergy and Infectious Disease
 1-R01-AI41103-01
Investigation of the Natural History of Babesiosis
 (5/1/97 - 4/31/00)
 \$143,914 per year, direct costs

NIH - Allergy and Infectious Disease
 1-R01-AI41103-01 supplement (1/1/98 - 12/31/01)
Investigation of the Natural History of Babesiosis- supplement for
Manuel Moro, DVM, Ph.D.
 \$156,230 total direct costs

Active support:

NIH-National Cancer Institute
 1R01-CA-79429 (6/01/99-5/31/04)
Cancer Chemoprevention-Role of Infection and Immunity
 PI: Loprinzi, Charles
 Role on project: Coinvestigator (5% salary support)
 \$27,841 total direct costs

NIH-National Cancer Institute
Epstein-Barr virus in postmenopausal breast cancer
 PI: Cerhan, James
 6/01/00-05/31/02
 Role on project: Coinvestigator (5%)
 \$134,280 total direct costs

NIH-NIAID
 2-R44-AI41840-03
Novel antigens for the serodiagnosis of human babesiosis
 09/30/99 - 09/29/01
 PI: Houghton, R
 Coinvestigator (15%)
 \$745,853 total costs

NIH-National Cancer Institute
 2-R44-CA75794-02
Novel genes for the diagnosis and prognosis of breast cancer
 PI: Houghton, R
 8/14/00 - 7/30/02 (10%)
 \$767,046 total costs

Defense Advanced Research Projects Agency (DARPA)

Curriculum Vitae - Page 8
David H. Persing, M.D., Ph.D.

"Immune modulation by topical administration of synthetic lipid A analogues"

Principal Investigator (25%)

\$3,649,412 over two years, total costs

Program starts 5/01/01

Pending Support at IDRI:

NIH - Allergy and Infectious Disease

2-R01-AI41103

Principal Investigator

Investigation of the Natural History of Babesiosis

\$143,914 per year, direct costs

NIH- Allergy and Infectious Diseases

New R01 submission-NHLBI

Principal Investigator

Detection and characterization of cryptic B. microti infection in blood donors.

Books:

1. Persing DH, Smith TF, White TJ, Tenover F (eds). *Diagnostic Molecular Microbiology: Principles and Applications*, ASM Press, Washington, DC, 1993.
2. Persing DH. *PCR Protocols for Emerging Infectious Diseases*, ASM Press, Washington, DC, 1996.
3. Persing DH, Belman, DA, White, TJ, Tenover, F, Versalovic, J, Tang, Y-W, and Ungér, E. (eds). *Diagnostic Molecular Microbiology: Principles and Applications* (second edition), ASM Press, Washington, DC, in preparation.

Book Chapters & Reviews:

1. Persing DH, Varmus HE, and Ganem D. Antibodies to preS and X determinants arise during natural infection with ground squirrel hepatitis virus. *In The Molecular Biology of Hepatitis Viruses*, Cold Spring Harbor Press, 1985.
2. Persing DH, Varmus HE, and Ganem D. Inhibition of secretion of hepatitis B surface antigen by a related presurface polypeptide. *In The Molecular Biology of Hepatitis Viruses*, Cold Spring Harbor Press, 1986.
3. White TJ, Madej R, and Persing DH. The polymerase chain reaction: clinical applications. *In Advances in Clinical Chemistry*, Academic Press, San Diego, CA, pp. 161-196, 1992.
4. Persing DH. Nucleic acid amplification techniques in the diagnosis of infectious diseases. *In Clinical Laboratory Medicine*, R. C. Tilton, ed., Mosby Year Book, pp. 572-581, 1992.
5. Campbell S, Fiedler P, and Persing DH. Nucleic acid amplification techniques in clinical diagnostics. *In Manual of Clinical Laboratory Immunology*, American Society for Microbiology, Washington, DC., 1992.
6. Persing DH, Barthold SW, and Malawista SE. Molecular detection of *Borrelia burgdorferi*. *In Lyme Disease: Molecular and Immunologic Approaches*, Cold Spring Harbor Laboratory Press, pp. 299-315, 1992.

Curriculum Vitae - Page 9
David H. Persing, M.D., Ph.D.

7. Barthold SW, de Souza M, Fikrig E, and Persing DH. Lyme borreliosis in the laboratory mouse. In *Lyme Disease: Molecular and Immunologic Approaches*, Cold Spring Harbor Laboratory Press, pp. 223-242, 1992.
8. Podzorski RP and Persing DH. Molecular detection and identification of microorganisms. In *Manual of Clinical Microbiology*, 6th edition, Murray PR, Baron EJ, Pfaller MA, Tenover FC, Tenover RH (eds.), pp. 130-157, ASM Press, Washington, DC., 1995.
9. Relman DA and Persing DH. Genotypic methods for microbial identification. In *PCR Protocols for Emerging Infectious Diseases*, ASM Press, Washington, DC, pp. 3-31, 1996.
10. Persing DH, Relman DA, and Tenover FC. Genotypic detection of antimicrobial resistance. In *PCR Protocols for Emerging Infectious Diseases*, ASM Press, Washington, DC, pp. 33-57, 1996.
11. Hofmeister EK, Persing DH, Mann L, and Woods GL. Spirochete infections. In *Clinical Diagnosis and Management by Laboratory Methods*. Henry, J.B. (Ed.), 19th edition, W.B. Saunders, Philadelphia, PA, 1996.
12. Whelan AC and Persing DH. The role of nucleic acid amplification and detection in the clinical laboratory. *Ann. Rev. Microbiol.* 50:349-373, 1996.
13. Persing DH and Conrad PA. Babesiosis: new insights from phylogenetic analysis. *Infect. Agents & Dis.* 4(4):182-195, 1996.
14. Zheng X and Persing DH. Genetic amplification techniques for the diagnosis of infectious disease. In *Rapid Methods*. Specter, S. (Ed.), 1996.
15. Persing DH. Nucleic acid-based pathogen discovery techniques: potential application to Xenozoonoses. In *Molecular Diagnosis* 1:3 243-254, 1996.
16. Persing DH. Babesiosis. In *Pathology of Infectious Diseases*, Volume I & II. Connor, D.H., F.W. Chandler, H.J. Manz, D.A. Schwartz, and E.E. Lack (Eds.), Appleton & Lange, Stamford, CT, 1997.
17. Persing DH. Lyme Disease. In *Encyclopedia of Human Biology*, Academic Press, Second Edition, Volume 1, pp. L24-1-L24-5, 1997.
18. Persing DH. Nucleic acid-based Pathogen Discovery Techniques for Potential Xenozoonotic Pathogens, In *Xenotransplantation*, 2nd Ed. Ed. D.K.C. Cooper, E. Kemp, J.L. Platt, D.J. White. 1997 pp. 749-765, 1997.
19. Persing DH. The cold zone: a curious convergence of tick-transmitted diseases. *Clin. Infect. Dis.*, 25(Suppl 1):S35-42, 1997.
20. Persing DH. Lyme Disease. In *Encyclopedia of Human Biology*, Academic Press, Second Edition, Volume 5. pp. 409-413, 1997.
21. Tang Y-W, Procop GW, and Persing DH. Molecular diagnostics of infectious diseases. *Clin. Chem.*, 43(11):2021-2038, 1997.
22. Dumler JS, and Persing DH. Ehrlichiosis and Babesiosis. In *Atlas of Infectious Diseases, External Manifestations of Systemic Infections*, Mandall GL and Fekety R (Eds.), Churchill Livingstone, Volume III. pp.7.2-7.10, 1998.

Curriculum Vitae - Page 10
David H. Persing, M.D., Ph.D.

23. Zheng X, and Persing DH. Genetic Amplification Techniques for Diagnosing Infectious Diseases. In *Rapid Detection of Infectious Agents, Infectious Agents and Pathogenesis series*, Specter S, Bendinelli M, Friedman H (Eds.), Plenum Press, New York, NY, pp. 69-81, 1998.
24. Newell JO, and Persing DH. Applications of Molecular Amplification Methods in Diagnostic Virology. In *Laboratory Diagnosis of Viral Infections*, Lennette EH and Smith TF (Eds), Marcel & Dekker, Inc., pp. 111-157, 1999.
25. Procop GW and Persing DH. Malaria and Babesia. In *Current Diagnosis and Treatment in Infectious Disease*, Appleton & Lange 1999.
26. Homer MJ, Aguilar-Delfin I, Telford SR III, Krause PJ, and Persing DH. Babesiosis, in press.
27. McQuiston JH, Childs JE, Chamberland ME, Tabor E for the Working Group on Transfusion Transmission of Tick-borne Diseases. Transmission of tick-borne agents of disease by blood transfusion: a review of known and potential risks in the United States. In *Transfusion 2000*; 40:274-284, December 10, 1999.
28. Hayden R and Persing DH. Diagnostic Molecular Microbiology. In *Current Clinical Topics in Infectious Diseases Vol.21* In press.

Original Articles:

1. Persing DH, McGinty L, Adams CW, and Fowler RG. Mutational specificity of the base analogue, 2-aminopurine, in *E. coli*. *Mutation Research* 83:25-37, 1981.
2. Caras IW, MacInnes MA, Persing DH, Coffino P, and Martin DW. Mechanism of 2-aminopurine mutagenesis in mouse T-lymphosarcoma cells. *Mol. Cell. Biol.* 2:1098-1103, 1982.
3. Persing DH, Varmus HE, and Ganem D. A frameshift mutation in the pre-S region of the human hepatitis B virus genome allows production of surface antigen particles but eliminates binding to polymerized albumin. *Proc. Natl. Acad. Sci. USA* 82:3440-3444, 1985.
4. Persing DH, Varmus HE, and Ganem D. Antibodies to preS and X determinants arise during natural infection with ground squirrel hepatitis virus. *J. Virol.* 60: 177-184, 1986.
5. Persing DH, Varmus HE, and Ganem D. Inhibition of secretion of hepatitis B surface antigen by a related presurface polypeptide. *Science* 234:1388-1391, 1986.
6. Persing DH, Varmus HE, and Ganem D. The preS1 protein of hepatitis B virus is acylated at its N-terminus with myristic acid. *J. Virol.* 61:1672-1677, 1987.
7. Persing DH and Landry ML. *In vitro* Amplification Techniques for the detection of Nucleic acids: New Tools for the Diagnostic Laboratory. *Yale J. Biol. Med.* 62:159-171, 1989.
8. Persing DH, Telford SR III, Rys PN, Dodge DE, White TJ, Malawista SE, and Spielman A. Detection of *Borrelia burgdorferi* DNA in museum specimens of *Ixodes dammini* ticks. *Science* 249:1420-1423, 1990.
9. Persing DH, Telford SR III, Spielman A, and Barthold SW. Detection of *Borrelia burgdorferi* infection in *Ixodes dammini* ticks with the polymerase chain reaction. *J. Clin. Microbiol.* 28:566-572, 1990.
10. Barthold SW, Persing DH, Armstrong A, and Peeples RA. Kinetics of *Borrelia burgdorferi* dissemination following intradermal inoculation of mice. *Am. J. Path.* 139:263-273, 1991.

Curriculum Vitae - Page 11
David H. Persing, M.D., Ph.D.

11. Persing DH. Polymerase chain reaction: Trenches to benches. *J. Clin. Micro.* 29:1281-1285. 1991.
12. Malawista SE, Schoen RT, Moore TL, Dodge DE, White TJ, and Persing DH. Failure of multitarget detection of *B. burgdorferi*-associated DNA sequences in synovial fluids of patients with juvenile rheumatoid arthritis: a cautionary note. *Arthr. & Rheum.* 35:246-247, 1992.
13. Persing DH, Mathiesen D, Marshall WF, Telford SR III, Spielman A, Thomford JW, and Conrad PA. Detection of *Babesia microti* by polymerase chain reaction. *J. Clin. Microbiol.* 30:2097-2103, 1992.
14. Armstrong AL, Barthold SW, Persing DH, and Beck DS. Carditis in Lyme disease susceptible and resistant strains of laboratory mice infected with *Borrelia burgdorferi*. *Am. J. Trop. Med. Hyg.* 47(2):249-258, 1992.
15. Conrad PA, Thomford J, Marsh A, Telford SR III, Anderson J, Spielman A, Sabin EA, Yamane I, and Persing DH. Ribosomal DNA probe for differentiation of *Babesia microti* and *B. gibsoni* isolates. *J. Clin. Microbiol.* 30:1210-1215, 1992.
16. Gustafsson CA and Persing DH. Chemi-luminescent universal probe for bacterial ribotyping. *J. Clin. Microbiol.* 30:1039-1041, 1992.
17. Fikrig E, Barthold SW, Persing DH, Sen X, FS Kantor, and Flavell RA. *Borrelia burgdorferi* strain 25015: characterization of OspA and vaccination against infection. *J. Immunol.* 148:2258-2260, 1992.
18. Persing DH and Rakela J. Polymerase chain reaction for detection of hepatitis viruses: Panacea or purgatory? *Gastroenterology* 103:1098-1099, 1992.
19. Shapiro ED, Gerber MA, Holabird NB, Berg AT, Feder HM Jr., Bell BL, Rys PN, and Persing DH. A controlled trial of antimicrobial prophylaxis for Lyme disease after deer-tick bites. *N. Engl. J. Med.* 327:1769-1773, 1992.
20. Persing DH. Diagnostic molecular microbiology: current challenges and future directions. *Diagn. Microbiol. Infect. Dis.* 16:159-163, 1992.
21. Meier A., Persing DH, Finken M, and Böttger EC. Elimination of contaminating DNA within PCR reagents-implications for a general approach to detect uncultured pathogens. *J. Clin. Microbiol.* 31:646-652, 1993.
22. Rys PN and Persing DH. Preventing false positives: quantitative evaluation of three protocols for inactivation of polymerase chain reaction amplification products. *J. Clin. Microbiol.* 31:2356-2360, 1993.
23. Espy MJ, Smith TF, and Persing DH. Dependence of polymerase chain reaction product inactivation protocols on amplicon length and sequence composition. *J. Clin. Microbiol.* 31:2361-2365, 1993.
24. Podzorski RP and Persing DH. PCR: The next decade. *Clin. Microbiol. Newslett.* 15:137-144. 1993.
25. Quick RE, Herwaldt BL, Thomford JW, Garnett ME, Eberhard ML, Wilson M, Spach DH, Dickerson JW, Telford SR III, Steingart KR, Pollock R, Persing DH, Kobayashi JM, Juranek DD, and Conrad PA. Babesiosis in Washington State: a new species of *Babesia*. *Ann. Intern. Med.* 119:284-290. 1993.
26. Barthold SW, de Souza MS, Janotka JL, Smith AL, and Persing DH. Chronic Lyme borreliosis in the laboratory mouse. *Am. J. Pathol.* 143:959-972, 1993.
27. Laskus T, Rakela J, Mosley JW, Nowicki M, and Persing DH. Prevalence and nucleotide sequence analysis of pre-core mutations among patients with fulminant hepatitis in the USA. *Gastroenterology*

Curriculum Vitae - Page 12
David H. Persing, M.D., Ph.D.

105:1178-1178, 1998.

28. Nocton JJ, Dressler F, Rutledge BJ, Rys PN, Persing DH, and Steere AC. Detection of *Borrelia burgdorferi* DNA by polymerase chain reaction in synovial fluid in Lyme arthritis. *N. Engl. J. Med.* 330:229-234, 1994.
29. Persing DH, Rutledge BJ, Rys PN, Podzorski DS, Reed KD, Mitchell PD, Lin B, and Malawista SE. Target imbalance: disparity of *Borrelia burgdorferi* genetic material in synovial fluid from Lyme arthritis patients. *J. Infect. Dis.* 169:664-668, 1994.
30. Yang L, Weis JH, Eichwald E, Kolbert CP, Persing DH, and Weis JJ. Heritable susceptibility to *Borrelia burgdorferi* induced arthritis is dominant and is associated with persistence of high numbers of spirochetes in tissues. *Infect. Immun.* 62:492-500, 1994.
31. Thomford JW, Conrad PA, Telford, SR, Mathiesen, D, Bowman BH, Spielman A, Eberhard MJ, Herwaldt BL, Quick RE, and Persing DH. Cultivation and phylogenetic characterization of a newly recognized human pathogenic protozoan. *J. Infect. Dis.* 169:1050-1058, 1994.
32. Laskus T, Rakela J, and Persing DH. The stem-loop structure of the cis-encapsidation signal is highly conserved in naturally occurring hepatitis B virus variants. *Virology* 200:809-812, 1994.
33. Laskus T, Rakela J, Tong MJ, Nowicki M, Mosley JW, and Persing DH. Naturally occurring hepatitis B virus mutants with deletions in the core promoter region. *J. Hepatol.* 20:837-841, 1994.
34. Persing DH, Mathiesen D, Podzorski D, and Barthold SW. Genetic stability of *Borrelia burgdorferi* recovered from chronically infected laboratory mice. *Infect. Immun.* 62:3521-3527, 1994.
35. Dicaudo DJ, Su WPD, Marshall WF, Malawista SE, Barthold SW, and Persing DH. Acrodermatitis chronica atrophicans in the United States: clinical and histopathologic features of six cases. *Cutis* 54:81-84, 1994.
36. Geha DJ, Uhl JR, Gustaferrro CA, and Persing DH. Multiplex PCR for identification of methicillin-resistant staphylococci in the clinical laboratory. *J. Clin. Microbiol.* 32:1768-1772, 1994.
37. Marshall WF III, Telford SR III, Rys PN, Rutledge BJ, Mathiesen D, Spielman A, and Persing DH. Detection of *Borrelia burgdorferi* DNA in museum specimens of *Peromyscus leucopus*. *J. Infect. Dis.* 170:1027-1032, 1994.
38. Malawista SE, Barthold SW, and Persing DH. Fate of *Borrelia burgdorferi* DNA in tissues of infected mice after antibiotic treatment. *J. Infect. Dis.* 170:1312-1316, 1994.
39. Laskus T, Rakela J, Steers JL, Wiesner RH, and Persing DH. Precore and contiguous regions of hepatitis B virus in liver transplantation for end-stage hepatitis B. *Gastroenterology* 107:1774-1780, 1994.
40. Hunt JM, Roberts GD, Stockman L, Felmlee TA, and Persing DH. Detection of a genetic locus encoding resistance to rifampin in mycobacterial cultures and in clinical specimens. *Diagn. Microbiol. Infect. Dis.* 18:219-227, 1994.
41. Laskus T, Rakela J, Tong MJ, and Persing DH. Nucleotide sequence analysis of the precore region in patients with spontaneous reactivation of chronic hepatitis B. *Dig. Dis. Sci.* 39:2000-2006, 1994.
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Curriculum Vitae - Page 13
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